

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

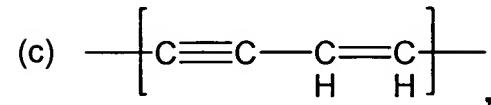
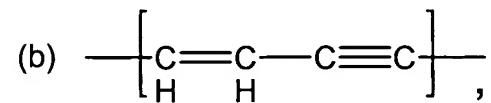
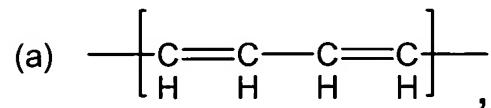
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Page 4 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

287. (NEW) A labeled target comprising

T -- L -- M

wherein T is a target, M is a marker moiety and L is a chemical group covalently linking said M to T, said chemical group L comprising a backbone that comprises at least one rigid group that comprises one or more of:



(d) multimers of (a), (b) or (c),

and (e) any combinations of (a), (b), (c) and (d).

288. (NEW) The labeled target of claim 287, wherein said target T comprises a protein, a peptide, a nucleic acid, a nucleotide or a nucleotide analog, a receptor, a natural or synthetic drug, a synthetic oligomer, a synthetic polymer, a hormone, a lymphokine, a cytokine, a toxin, a ligand, an antigen, a hapten, an antibody, a carbohydrate, a sugar or an oligo- or polysaccharide.

289. (NEW) The labeled target of claim 288, wherein said nucleic acid or nucleotide or nucleotide analog is modified.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 5 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

290. (NEW) The labeled target of claim 288, wherein said ligand comprises biotin, iminobiotin, digoxxygenin or fluorescein.

291. (NEW) The labeled target of claim 287, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxxygenin or fluorescein.

292. (NEW) The labeled target of claim 287, wherein said marker moiety M comprises a fluorescent dye.

293. (NEW) The labeled target of claim 292, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

294. (NEW) The labeled target of claim 293, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

295. (NEW) The labeled target of claim 287, wherein said backbone comprises one or more carbon atoms.

296. (NEW) The labeled target of claim 287, wherein said backbone comprises at least one non-carbon atom.

297. (NEW) The labeled target of claim 296, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 6 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

298. (NEW) The labeled target of claim 287, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

299. (NEW) The labeled target of claim 287, wherein said structure (a) comprises two alkene groups in *cis* conformation to each other.

300. (NEW) The labeled target of claim 287, wherein said structure (a) comprises two alkene groups in *trans* conformation to each other.

301. (NEW) The labeling reagent of claim 287, wherein one or more hydrogens are substituted by a chemical moiety.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

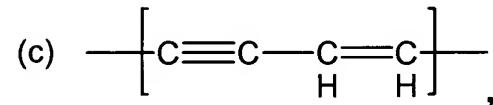
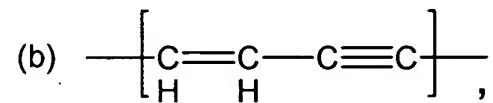
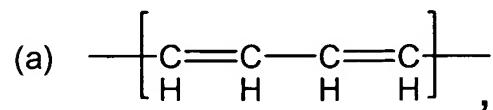
Filed: Herewith

Page 7 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

302. (NEW) A labeling reagent comprising



wherein R is a reactive group, M is a marker moiety and L is a chemical group covalently linking said M to R, said chemical group L comprising a backbone that comprises at least one rigid group that comprises one or more of:



(d) multimers of (a), (b) or (c),

and (e) any combinations of (a), (b), (c) and (d).

303. (NEW) The labeling reagent of claim 302, wherein said reactive group R comprises sulfhydryl, hydroxyl, amine, isothiocyanate, isocyanate, monochlorotriazine, dichlorotriazine, mono- or di-halogen substituted pyridine, mono- or di-halogen substituted diazine, maleimide, aziridine, sulfonylhalide, acid halide, hydroxysuccinimide ester, hydroxysulfosuccinimide ester, imidoester, hydrazine, azidonitrophenyl, azide, 3-(2-pyridyl dithio)-propionamide, glyoxal or aldehyde.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 8 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

304. (NEW) The labeling reagent of claim 303, wherein as a reactive group R is capable of forming a carbon-carbon linkage with a target.

305. (NEW) The labeling reagent of claim 304, wherein said reactive group R comprises an alkene group, an alkyne group, a halogenated compound or a metallo-organic compound.

306. (NEW) The labeling reagent of claim 305, wherein said metallo-organic compound comprises mercury, zinc, copper or platinum.

307. (NEW) The labeling reagent of claim 305, wherein said metallo-organic compound comprises an aromatic group, an aromatic heterocyclic group, an alkene group or an alkyne group.

308. (NEW) The labeling reagent of claim 302, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxigenin or fluorescein.

309. (NEW) The labeling reagent of claim 302, wherein said marker moiety M comprises a fluorescent dye.

310. (NEW) The labeling reagent of claim 309, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

311. (NEW) The labeling reagent of claim 310, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 9 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

312. (NEW) The labeling reagent of claim 302, wherein said backbone comprises one or more carbon atoms.

313. (NEW) The labeling reagent of claim 302, wherein said backbone comprises at least one non-carbon atom.

314. (NEW) The labeling reagent of claim 313, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

315. (NEW) The labeling reagent of claim 313, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

316. (NEW) The labeling reagent of claim 302, wherein said structure (a) comprises two alkene groups in *cis* conformation to each other.

317. (NEW) The labeling reagent of claim 302, wherein said structure (a) comprises two alkene groups in *trans* conformation to each other.

318. (NEW) The labeling reagent of claim 302, wherein one or more hydrogens are substituted by a chemical moiety.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 10 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

319. (NEW) A labeled target comprising

T -- L -- M

wherein T is a target, M is a marker moiety and L is a chemical group covalently linking said M to T, said chemical group L comprising a backbone that comprises at least two consecutive polar rigid units.

320. (NEW) The labeled target of claim 319, wherein said target T comprises a protein, a peptide, a nucleic acid, a nucleotide or a nucleotide analog, a receptor, a natural or synthetic drug, a synthetic oligomer, a synthetic polymer, a hormone, a lymphokine, a cytokine, a toxin, a ligand, an antigen, a hapten, an antibody, a carbohydrate, a sugar or an oligo- or polysaccharide.

321. (NEW) The labeled target of claim 320, wherein said nucleic acid or nucleotide or nucleotide analog is modified.

322. (NEW) The labeled target of claim 320, wherein said ligand comprises biotin, iminobiotin, digoxigenin or fluorescein.

323. (NEW) The labeled target of claim 319, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxigenin or fluorescein.

324. (NEW) The labeled target of claim 319, wherein said marker moiety M comprises a fluorescent dye.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 11 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

325. (NEW) The labeled target of claim 324, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

326. (NEW) The labeled target of claim 325, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

327. (NEW) The labeled target of claim 319, wherein at least one of said two consecutive rigid polar units of said backbone is heteroatomic.

328. (NEW) The labeled target of claim 327, wherein said heteroatomic backbone comprises a carbon atom that is bonded to a N, S, O, P or halogen atom.

329. (NEW) The labeled target of claim 327, wherein said heteroatom comprises an -OH, -SH, -SO<sub>3</sub>, -PO<sub>4</sub>, -COOH or -NH<sub>2</sub> groups.

330. (NEW) The labeled target of claim 327, wherein at least one of said two consecutive rigid polar units comprises a peptide bond.

331. (NEW) The labeled target of claim 327, wherein at least one of said two consecutive polar units comprises a ring structure.

332. (NEW) The labeled target of claim 331, wherein said ring structure further comprises polar or charged functional groups attached to said ring.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 12 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

333. -(NEW) The labeled target of claim 332, wherein said polar or charged functional groups comprise halide, -OH, -SH, -SO<sub>3</sub>, -PO<sub>4</sub>, -COOH or -NH<sub>2</sub> groups.

334. (NEW) The labeled target of claim 331, wherein said ring structure comprises a sugar.

335. (NEW) The labeled target of claim 331, wherein said ring structure comprises a substituted heterocyclic aromatic compound.

336. (NEW) The labeled target of claim 319, wherein said backbone comprises one or more carbon atoms.

337. (NEW) The labeled target of claim 319, wherein said backbone comprises at least one non-carbon atom.

338. (NEW) The labeled target of claim 337, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

339. The labeled target of claim 319, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 13 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

340. A labeling reagent comprising



wherein R is a reactive group, M is a marker moiety and L is a chemical group covalently linking said M to R, said chemical group L comprising a backbone that comprises at least two consecutive polar rigid units.

341. (NEW) The labeling reagent of claim 340, wherein said reactive group R comprises sulfhydryl, hydroxyl, amine, isothiocyanate, isocyanate, monochlorotriazine, dichlorotriazine, mono- or di-halogen substituted pyridine, mono- or di-halogen substituted diazine, maleimide, aziridine, sulfonylhalide, acid halide, hydroxysuccinimide ester, hydroxysulfosuccinimide ester, imidoester, hydrazine, azidonitrophenyl, azide, 3-(2-pyridyl dithio)-propionamide, glyoxal or aldehyde.

342. (NEW) The labeling reagent of claim 340, wherein as a reactive group R is capable of forming a carbon-carbon linkage with a target.

343. (NEW) The labeling reagent of claim 340, wherein said reactive group R comprises an alkene group, an alkyne group, a halogenated compound or a metallo-organic compound.

344. (NEW) The labeling reagent of claim 343, wherein said metallo-organic compound comprises mercury, zinc, copper or platinum.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 14 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

345. (NEW) The labeling reagent of claim 343, wherein said metallo-organic compound comprises an aromatic group, an aromatic heterocyclic group, an alkene group or an alkyne group.

346. (NEW) The labeling reagent of claim 340, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxxygenin or fluorescein.

347. (NEW) The labeling reagent of claim 340, wherein said marker moiety M comprises a fluorescent dye.

348. (NEW) The labeling reagent of claim 347, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

349. (NEW) The labeling reagent of claim 348, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

350. (NEW) The labeled target of claim 340, wherein at least one of said two consecutive rigid polar units is heteroatomic.

351. (NEW) The labeled target of claim 350, wherein said heteroatomic rigid polar units comprises a carbon atom that is bonded to a N, S, O, P or halogen atom.

352. (NEW) The labeled target of claim 350, wherein said heteroatom comprises an -OH, -SH, -SO<sub>3</sub>, -PO<sub>4</sub>, -COOH or -NH<sub>2</sub> groups.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 15 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

353. (NEW) The labeled target of claim 340; wherein at least one of said two consecutive rigid polar units comprises a peptide bond.

354. (NEW) The labeled target of claim 340, wherein at least one of said two consecutive polar units comprises a ring structure.

355. (NEW) The labeled target of claim 354, wherein said ring structure further comprises polar or charged functional groups attached to said ring.

356. (NEW) The labeled target of claim 355, wherein said polar or charged functional groups comprise halide, -OH, -SH, -SO<sub>3</sub>, -PO<sub>4</sub>, -COOH or -NH<sub>2</sub> groups.

357. (NEW) The labeled target of claim 354, wherein said ring structure comprises a sugar.

358. (NEW) The labeled target of claim 354, wherein said ring structure comprises a substituted heterocyclic aromatic compound.

359. (NEW) The labeling reagent of claim 340, wherein said backbone comprises one or more carbon atoms.

360. (NEW) The labeling reagent of claim 340, wherein said backbone comprises at least one non-carbon atom.

361. (NEW) The labeling reagent of claim 360, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 16 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

362. (NEW) The labeling reagent of claim 340, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

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